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10/561,862	12/20/2005	Hiroyuki Anzai	UNIU90.001APC	5508

  

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EXAMINER	
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1796	

  

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/561,862

Applicant(s)

ANZAI ET AL.

Examiner

Melissa Winkler

Art Unit

4134

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 12/20/05
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

The disclosure is objected to because of the following informalities: Table I does not list the trade names for Polyols A, B, and C. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claim 6** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 6 recites the limitation "the above alkylene oxide" in Lines 2 - 3. There is insufficient antecedent basis for this limitation in the claim, as an alkylene oxide is not mentioned in Claims 1 or 3.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 and 3 - 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,786,400 to Brock et al. in view of US 6,313,060 to Sugiyama et al. and US 6,372,811 to Singh et al.

**Regarding Claim 1.** Brock et al. teach a polyol composition used to prepare a rigid polyurethane foam containing atleast one polyol compound, a blowing agent, a catalyst, and a polyisocyanate (Column 2, Lines 10 - 21).

Brock et al. do not expressly teach the polyol composition contains a foam stabilizer. However, Sugiyama et al. also teach a polyol composition used to prepare a polyurethane foam in which a foam stabilizer is present (Column 11, Lines 8 - 12).

Brock et al. and Sugiyama et al. are analogous art as they are from the same field of endeavor, namely polyurethane foams. At the time of invention, it would have been obvious to a person of ordinary skill in the art to add a foam stabilizer to the polyol composition taught by Brock et al. The motivation would have been that a foam stabilizer can be used to extend the lifetime of a foam.

Brock et al. additionally do not teach the claimed blowing agent. However, Singh et al. also teach a composition used to prepare a rigid polyurethane foam that contains 1,1,1,3,3-pentafluoropropane (HFC-245fa) as a blowing agent (Column 3, Lines 29 – 40). Brock et al. and Singh et al. are analogous art as they are from the same field of endeavor, namely rigid polyurethane foams. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use HFC-245fa as the principle blowing agent in the composition taught by Brock et al. The motivation would have been that when HFC-245fa is selected as the blowing agent, the resultant polyurethane foams have fire performance, compressive strength, and dimensional stability comparable or superior to foams blown with chlorofluorocarbon or hydrochlorofluorocarbon blowing agents (Singh et al., Column 2, Line 66 – Column 3, Line 8).

Brock et al. also do not teach a compatibilizer is used in the polyol composition. However, Singh et al. do teach a compatibilizer, such as 1-methyl-2-pyrrolidinone, may be used when preparing the rigid polyurethane foam. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use 1-methyl-2-pyrrolidinone in the polyol composition taught by Brock et al. The motivation would have been that 1-methyl-2-pyrrolidinone may be used to reduce the viscosity of a composition (Singh et al., Column 7, Lines 15 – 17).

**Regarding Claim 3.** Brock et al. teach the composition of Claim 3 wherein the polyol employed may be prepared as a tertiary amino group-containing polyol compound, an aliphatic polyol, or an aromatic polyol (Column 3, Line 5 – Column 4, Line 7).

**Regarding Claim 4.** Brock et al. teach the polyol composition of Claim 3 wherein the polyol may be prepared from the reaction of an alkylene oxide with a starting material such as ammonia (Column 3, Lines 5 - 36).

**Regarding Claim 5.** Brock et al. teach the composition of Claim 3 wherein the aliphatic polyol may be prepared by the reaction of an alkylene oxide with a starting material such as butanediol-1,4 (Column 3, Lines 5 - 40).

**Regarding Claim 6.** Brock et al. teach the composition of Claim 3 wherein the polyol compound may include a polyester polyol compound (Column 2, Lines 14 – 15). In one embodiment, the polyester polyol is an aromatic polyol prepared from a polycarboxylic acid and a polyvalent alcohol (Column 3, Lines 50 - 53). The polycarboxylic acid may be an aromatic polycarboxylic acid such as phthalic acid, isophthalic acid, or terephthalic acid (Column 3, Lines 55 – 62). The polyvalent alcohol may be a polyhydric alcohol such as diethylene glycol (Column 3, Lines 63 - 64).

Brock et al. do indicate the polyol component may be a combination of polyols (Column 2, Lines 14 - 15) though an aromatic polyol obtained from an alkylene oxide

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and aromatic polyfunctional active hydrogen compound is not expressly disclosed.

However, Sugiyama et al. also teach a polyether polyol produced by addition of an alkylene oxide to a polyhydroxy compound (Column 8, Lines 12 – 20). Sugiyama et al. specifically cite bisphenol A, a polyfunctional active hydrogen compound with an aromatic ring, as a suitable polyhydroxy compound for reaction with the alkylene oxide (Column 8, Lines 26 – 35). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the aromatic polyol taught by Sugiyama et al. in conjunction with the aromatic polyol taught by Brock et al. The motivation would have been that the polyether polyol taught by Sugiyama et al. has been found to minimize problems, such as a decrease in hardness and deterioration of compression set, associated with polyurethane foams prepared from other, conventional polyols (Sugiyama et al., Column 9, Lines 35 - 42).

**Claim 2** is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,786,400 to Brock et al. in view of US 6,313,060 to Sugiyama et al. and US 6,372,811 to Singh et al.

**Regarding Claim 2.** Brock et al. teach a method of producing a hard polyurethane foam in which an isocyanate, such as polymethylenepolyphenyl polyisocyanate (polymeric MDI), is blended with a polyol mixture. Following the

mixing step, the composition is foamed and cured to obtain a rigid polyurethane foam (Column 6, Lines 48 – 52).

The polyol composition taught by Brock et al. contains atleast one polyol compound, a blowing agent, a catalyst, and a polyisocyanate (Column 2, Lines 10 - 21).

Brock et al. do not expressly teach the polyol composition contains a foam stabilizer. However, Sugiyama et al. also teach a polyol composition used to prepare a polyurethane foam in which a foam stabilizer is present (Column 11, Lines 8 – 12). At the time of invention, it would have been obvious to a person of ordinary skill in the art to add a foam stabilizer to the polyol composition taught by Brock et al. The motivation would have been that a foam stabilizer can be used to extend the lifetime of a foam.

Brock et al. additionally do not teach the claimed blowing agent. However, Singh et al. also teach a composition used to prepare a rigid polyurethane foam that contains 1,1,1,3,3-pentafluoropropane (HFC-245fa) as a blowing agent (Column 3, Lines 29 – 40). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use HFC-245fa as the principle blowing agent in the composition taught by Singh et al. The motivation would have been that when HFC-245fa is selected as the blowing agent, the resultant polyurethane foams have fire performance, compressive strength, and dimensional stability comparable or superior to foams blown



with chlorofluorocarbon or hydrochlorofluorocarbon blowing agents (Singh et al., Column 2, Line 66 – Column 3, Line 8).

Brock et al. also do not teach a compatibilizer is used in the polyol composition. However, Singh et al. do teach a compatibilizer, such as 1-methyl-2-pyrrolidinone, may be used when preparing the rigid polyurethane foam. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use 1-methyl-2-pyrrolidinone in the polyol composition taught by Brock et al. The motivation would have been that 1-methyl-2-pyrrolidinone may be used to reduce the viscosity of a composition (Singh et al., Column 7, Lines 15 – 17).

**Claims 7 – 13 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,786,400 to Brock et al. in view of US 6,313,060 to Sugiyama et al. and US 6,372,811 to Singh et al.

**Regarding Claim 7.** Brock et al. teach a polyol composition used to prepare a rigid polyurethane foam containing atleast one polyol compound, a blowing agent, and a catalyst (Column 2, Lines 10 - 21).

Brock et al. do not expressly teach the polyol composition contains a foam stabilizer. However, Sugiyama et al. also teach a polyol composition used to prepare a polyurethane foam in which a foam stabilizer is present (Column 11, Lines 8 – 12). At

the time of invention, it would have been obvious to a person of ordinary skill in the art to add a foam stabilizer to the polyol composition taught by Brock et al. The motivation would have been that a foam stabilizer can be used to extend the lifetime of a foam.

Brock et al. additionally do not teach the claimed blowing agent. However, Singh et al. also teach a composition used to prepare a rigid polyurethane foam that contains 1,1,1,3,3-pentafluoropropane (HFC-245fa) as a blowing agent (Column 3, Lines 29 – 40). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use HFC-245fa as the principle blowing agent in the composition taught by Singh et al. The motivation would have been that when HFC-245fa is selected as the blowing agent, the resultant polyurethane foams have fire performance, compressive strength, and dimensional stability comparable or superior to foams blown with chlorofluorocarbon or hydrochlorofluorocarbon blowing agents (Singh et al., Column 2, Line 66 – Column 3, Line 8).

Brock et al. also do not teach a compatibilizer is used in the polyol composition. However, Singh et al. do teach a compatibilizer, such as 1-methyl-2-pyrrolidinone, may be used when preparing the rigid polyurethane foam. At the time of invention, it would have been obvious to a person of ordinary skill in the art to use 1-methyl-2-pyrrolidinone in the polyol composition taught by Brock et al. The motivation would

have been that 1-methyl-2-pyrrolidinone may be used to reduce the viscosity of a composition (Singh et al., Column 7, Lines 15 – 17).

**Regarding Claim 8.** Brock et al. teach the composition of Claim 7 contains a polyisocyanate (Column 2, Lines 10 - 21).

**Regarding Claim 9.** Brock et al. teach the composition of Claim 7 wherein the polyol employed may be prepared as a tertiary amino group-containing polyol compound, an aliphatic polyol, or an aromatic polyol (Column 3, Line 5 – Column 4, Line 7).

**Regarding Claim 10.** Brock et al. teach the polyol composition of Claim 9 wherein the polyol may be prepared from the reaction of an alkylene oxide with a starting material such as ammonia (Column 3, Lines 5 - 36).

**Regarding Claim 11.** Brock et al. teach the composition of Claim 9 wherein the aliphatic polyol may be prepared by the reaction of an alkylene oxide with a starting material such as butanediol-1,4 (Column 3, Lines 5 - 40).

**Regarding Claim 12.** Brock et al. teach the polyol composition of Claim 9 but do not expressly teach an aromatic polyol obtained from an alkylene oxide and aromatic polyfunctional active hydrogen compound. However, Sugiyama et al. also teach a polyether polyol produced by addition of an alkylene oxide to a polyhydroxy compound (Column 8, Lines 12 – 20). Sugiyama et al. specifically cite bisphenol A, a

polyfunctional active hydrogen compound with an aromatic ring, as a suitable polyhydroxy compound for reaction with the alkylene oxide (Column 8, Lines 26 – 35). At the time of invention, it would have been obvious to a person of ordinary skill in the art to use the aromatic polyol taught by Sugiyama et al. in conjunction with the aromatic polyol taught by Brock et al. The motivation would have been that the polyether polyol taught by Sugiyama et al. has been found to minimize problems, such as decrease in hardness and deterioration of compression set, associated with polyurethane foams prepared from other polyols (Sugiyama et al., Column 9, Lines 35 - 42).

**Regarding Claim 13.** Brock et al. teach a method of producing a hard polyurethane foam in which an isocyanate, such as polymethylenepolyphenyl polyisocyanate (polymeric MDI), is blended with the polyol mixture of Claim 7. Following the mixing step, the composition is foamed and cured to obtain a rigid polyurethane foam (Column 6, Lines 48 – 52).

**Regarding Claim 15.** Brock et al. teach the method of Claim 13 wherein the isocyanate and polyol mixture are blended at a temperature of 20°C (Column 6, Lines 48 – 53).

**Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,786,400 to Brock et al. in view of US 6,313,060 to Sugiyama et al. and US 6,372,811 to Singh et al. as applied to Claims 7 and 13 above, and further in view of US 5,164,419 to Bartlett et al.

**Regarding Claim 14.** Brock et al. teach the method of Claim 13 but are silent regarding the NCO:OH ratio. However, Bartlett et al. also teach a method making a rigid polyurethane foam in which the isocyanate index/NCO:OH ratio is preferably in the range of about 1.0 to about 4.0 (Column 5, Lines 9 – 14). Brock et al. and Bartlett et al. are analogous art as they are from the same field of endeavor, namely rigid polyurethane foams. At the time of invention, it would have been obvious to a person of ordinary skill in the art to react the polyol and isocyanate components taught by Brock et al. at the isocyanate index taught by Bartlett et al. The motivation would have been that the isocyanate index taught by Bartlett et al. provides advantages such as stiffness and minimal shrinkage in the final foam product.

*Correspondence*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Winkler whose telephone number is (571)270-3305. The examiner can normally be reached on Monday - Friday 7:30AM - 5PM E.S.T..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571)272-1197. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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MW  
November 7, 2007

  
**MARK EASHOO, PH.D.**  
**SUPERVISORY PATENT EXAMINER**

13 / Nov / 07